

## II. Alternatives Analysis - continued

3. Has water reuse or recycle been investigated as an alternative to discharge?  
(If yes, then provide the reasons why it is not a feasible alternative)

Yes



No



Water conservation practices proposed for this operation include using water from this project for on-site dust suppression for the haul/access road and to operate a coal truck wash. The slope of the area ranges from 0.5% to 25%. The reclaimed area has a slope greater than 6% which makes irrigation impractical due to the rate of absorption. The permit area consists of 170.4 acres. Of this 170.4 acres 154.0 acres are haul/access road. The remaining permit area has been reclaimed and re-vegetated. Since the haul/access road is permanent and the remaining 12.4 acres have been reclaimed and re-vegetated there is no need for an irrigation system. Current reclamation practices have demonstrated that irrigation of reclaimed areas is not necessary when seeding and/or mulching are preformed at the proper time.

It is proposed that the sediment control structure be used to control runoff from the 118 acre drainage area. The runoff collected by the basin will be discharge to a man-made ditch that will divert the runoff to a pit impoundment to the south of the permit area. Water from the impoundment will then be pumped to a storage tanks adjacent to a coal truck wash area. This water will be used to water the haul roads to control dust and to wash coal trucks. Because of this basin and impoundment water would not have to be withdrawn from a stream or river in the area.

4. Have alternative process or treatment options been evaluated?  
(If yes, then indicate what process or treatment options have been evaluated and provide the reasons they were not feasible.)

Yes



No



See Attachment II.4

#### **Attachment II.4**

The sediment control structure discharges to an existing pit impoundment prior to discharging to a stream. Hydrologic control release practices are not proposed for this operation. If a hydrologic release is necessary, such as structure maintenance, no hydrologic release will be performed when the receiving stream is less than 0.1 CFS. In the event a release is necessary the release will be monitored and the results reported to the Division of Water and the Department for Natural Resources. The sediment control structure will provide a controlled release of runoff during the rainy season and during storms. The controlled release will help prevent erosion and control sediment that could run into streams. During the dry season the structure would not discharge and could provide a source of water for wildlife.

The use of a wastewater treatment system was considered but would not be practical. Based on an average yearly rainfall of 4.5 inches on 118 acres at 75% runoff a treatment facility would have to treat approximately 10.8 million gallons of runoff annually. Cost of treating the runoff is estimated at \$0.01 per gallon or \$108,000.00 per year. Construction and removal of such a facility is estimated at over \$150,000.00.

As an alternative treatment option, sand filtration was evaluated but deemed not applicable. Sand filtration is used primarily as a pre-treatment to remove microbial contaminants not particulate matter in storm run-off in smaller, urban drainage areas. The higher sediment involved in a storm event could clog the filtration unit rendering it ineffective. Sand filters do not control storm water flow and do not prevent downstream bank and channel erosion as proposed sediment structures are designed to do. Also the operational efficiency of these sand filtration units has not been evaluated in colder climates and freezing temperatures.

Using silt fences and straw bales for sediment control was considered as per BMP's but were determined to be inadequate due to the drainage area size. The use of silt fences and straw bales may be used as a temporary measure during sediment control structure construction.